

MTH 65 – Winter Term 2010
Final Exam – No Calculator Portion

Name _____

1. Write each requested bit of information in the provided blank. **Do all of your work on the provided scratch paper.** These questions will be marked right or wrong. (1.5 points each)

a. Expand and simplify $(3x^2 - y)(3x^2 + y)$. a. _____

b. Expand and simplify $2(x+1)^2$. b. _____

c. Expand and simplify $(x-3)(x^2 + 3x + 9)$. c. _____

d. Divide and simplify $\frac{12x^2y^3 + 9xy^2 + 3xy}{3xy}$. d. _____

e. Completely factor $x^3 - 4x^2 - 21x$. e. _____

f. Completely factor $2x^2 + 5x - 3$. f. _____

g. Completely factor $4x^2 - 9y^2$. g. _____

h. Completely factor $w^3 + 8$. h. _____

i. Completely factor $x^2 + 14x - 45$. i. _____

j. Completely factor $x^2 + 4$. j. _____

2. Write each requested bit of information in the provided blank. **Do all of your work on the provided scratch paper.** These questions will be marked right or wrong. Make sure that none of your answers contain negative exponents. (2 points each)

a. Completely simplify $4x^{-5}$.

a. _____

b. Completely simplify $\frac{(x^3)^3}{x^{-9}}$.

b. _____

c. Completely simplify $(a+b)^2$.

c. _____

d. Completely simplify $\frac{2 \pm \sqrt{24}}{2}$.

d. _____

e. Completely simplify $\sqrt{72}$.

e. _____

f. Completely simplify $\frac{10 \pm \sqrt{20}}{5}$.

f. _____

g. State all solutions to $x^2 - 6x + 9 = 0$.

g. _____

h. What is the degree of the polynomial $5x^2 + 6x - 2$?

h. _____

i. What is the degree of the term $6x^2yz$?

i. _____

3. Consider the function f shown in Figure 1.

a. State the domain and range of f . (3 points each)

Domain: _____

Range: _____

b. State the value of $f(2)$. (2 points)

c. State all solutions to the equation $f(x) = 4$. (2 points)

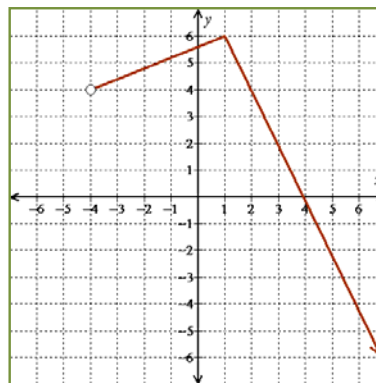


Figure 1

4. Find the value of $g(-2)$ if $g(t) = t^2 - t^3$. Make sure that you show the work the way it was illustrated and discussed in class. (3 points)

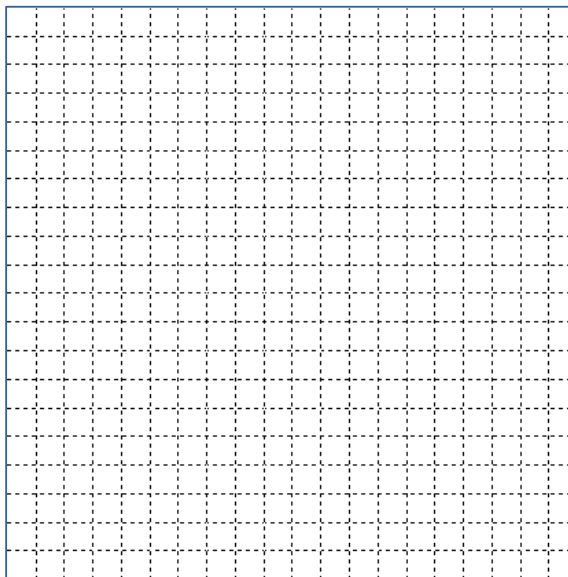
5. Compute $\frac{(3.0 \times 10^6)(8.0 \times 10^{-16})}{1.0 \times 10^{-4}}$. Write the result in scientific notation. (6 points)

6. State (in the provided blanks) the vertex and intercepts of the parabola $y = 2x^2 - 16x + 24$. Then fill into the table 9 ordered pairs that clearly illustrate the symmetry of the parabola. Finally, graph the parabola onto the provided axes making sure that you give appropriate consideration to the placement of the axes and the scale to use on each axis. (9 points)

Vertex: _____ y-intercept: _____

x-intercepts: _____

x	y



MTH 65 – Winter Term 2010
Final Exam – Calculator Portion

Name _____

1. Use the quadratic formula to solve the equation $2x^2 - 4x - 3 = 0$. Make sure that you completely simplify your solutions and that you clearly state your solutions. (6 points)

2. Solve each equation using whatever method you desire. Make sure that you completely simplify your solutions and that you clearly state your solutions. (6 points total)

- a. Solve $(2x - 3)^2 = 25$.

- b. Solve $2(t + 3) - (t - 7) = 0$.

3. Solve each system of equations using the specified methods. Make sure that you clearly state your solutions. (5 points each)

a. Use the addition (elimination) method to solve system
$$\begin{cases} -2x + 12y = 48 \\ \frac{1}{2}x - 3y = 12 \end{cases}.$$

b. Use the substitution method to solve the system
$$\begin{cases} 3x - 12y = 18 \\ x + 4y = -4 \end{cases}$$

4. Find the value of x that satisfies the right triangle in Figure 1. Then state the length of each side of the triangle assuming that the unit of measurement is inches. (6 points)

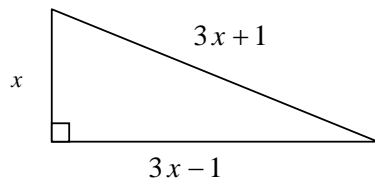


Figure 1

5. Completely factor each expression showing work in the manner illustrated in class.
(5 points total)

a. Factor $4x^4y + 4x^3y - 288x^2y$.

b. Factor $3x^2y^2 - 4xy - 32$.

6. Heidi Hoho had a total of \$17,000 invested in two different accounts; one account earned a total of 6% interest last year while the other earned a total of 6.5% interest. Between the two accounts, the total amount of interest Heidi earned was \$1087. Use a system of equations to determine how much money Heidi had invested in each account. (6 points)